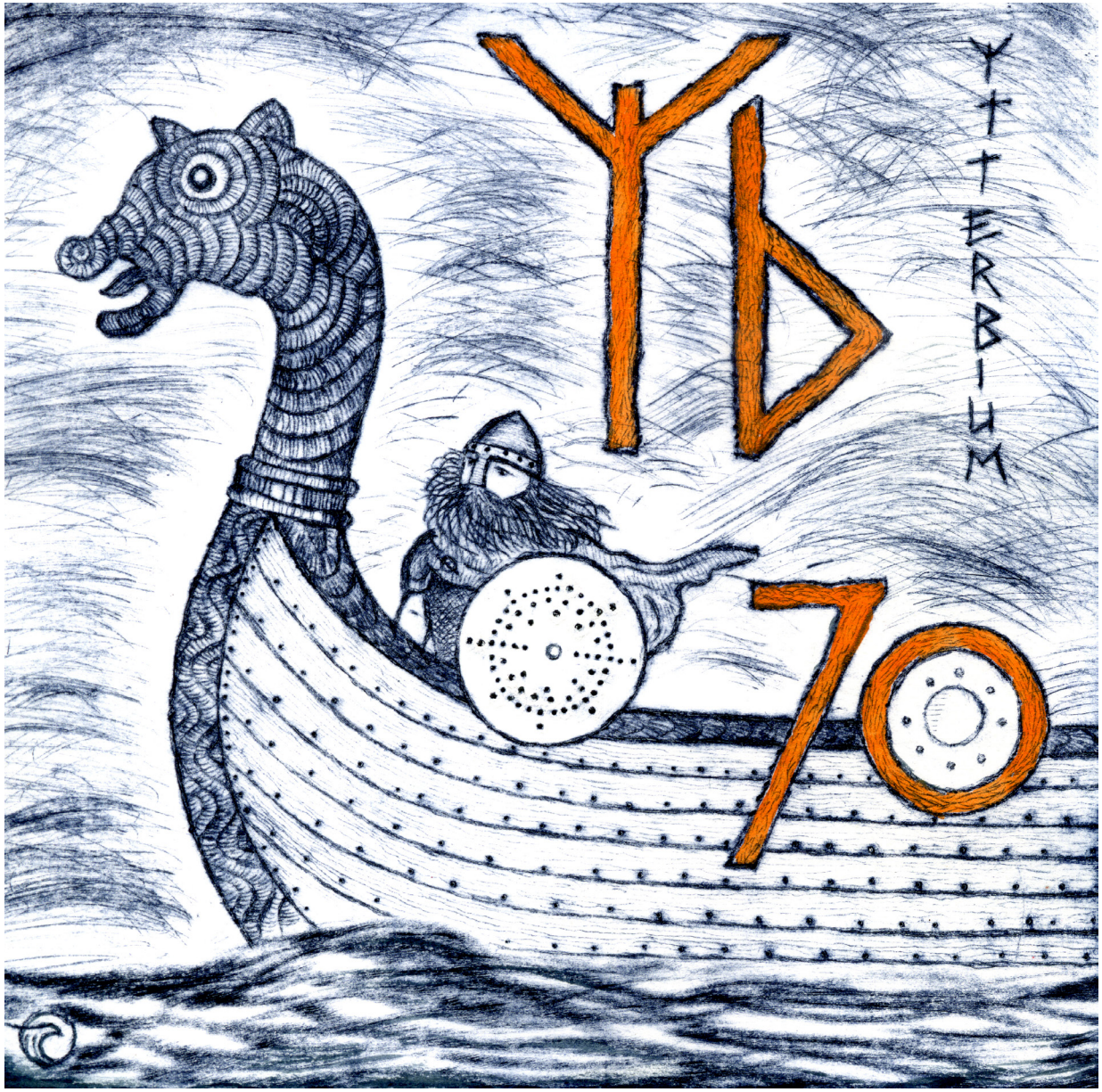

FRED DUNCAN

YTTERBIUM

Element Symbol: Yb
Atomic Number: 70

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YTTERBIUM

Element symbol: Yb
Atomic number: 70

A new compound was discovered in 1878 by Swiss chemist Jean Charles Galissard de Marignac. He called it Ytterbia after the Swedish village Ytterby. Three other elements (yttrium, erbium and terbium) are also named after the same village. In 1907 a French chemist, Geoges Urbain separated Ytterbia into two compounds which became known as Lutetium and Ytterbium.

Ytterbium occurs along with other rare earths in a number of rare minerals. It is commercially recovered principally from monazite sand. Rare earths aren't actually rare (they were called this because they were difficult to separate in their pure form), ytterbium is the 43rd most abundant element in the Earth's crust. In soil it is present at about 2 parts per million. It makes up about 1.5 parts per trillion of sea water is virtually non-existent in the atmosphere. The main mining areas are China, United States, Brazil, India, Sri Lanka and Australia; and reserves of ytterbium are estimated as about one million tonnes.

Ytterbium has a bright, shiny surface and is malleable and ductile so it can be hammered into thin sheets or drawn into thin wires.

Ytterbium has no major commercial uses and only around 50 tonnes are produced globally each year. A small amount is used as an alloy to add strength to stainless steel, glass or ceramics. It is added to cables to create amplifiers in telecommunications or can be used in making lasers for remotes sensing applications. Some ytterbium alloys have been used in dentistry. Ytterbium can be used to convert invisible infra-red light into green and/or red light which can be used in anti-forgery security inks and in bank notes.

Ytterbium compounds absorb and give out light in the near infra- red making them useful in probes for examining biological tissue or in solar cells. One isotope of ytterbium is useful for keeping accurate time losing only a second every 100 million years. The electrical conductivity of ytterbium varies with pressure which has made it useful in stress gauges used to monitor shock waves associated with nuclear explosions.

Ytterbium has no biological role although ytterbium salts do stimulate metabolism. Soluble slats of ytterbium are mildly toxic if eaten whereas the insoluble salts are non-toxic. Most Ytterbium compounds are skin and eye irritants and may be carcinogens. Ytterbium dust is a fire and explosion hazard.

Provided by the element sponsor sponsor Michelle Iles

ARTISTS DESCRIPTION

Ytterbium is a rare earth mineral, unknown to most of the Earth's inhabitants, including (until recently) me. It has no major commercial uses but a small amount is used as an alloy to add strength to stainless steel, glass or ceramics. Ytterbium is named after Ytterby- a coastal village in Sweden. I could imagine Viking ships setting out from this port on expeditions of settlement or plunder. I am sure that Ytterbium didn't feature highly in their lists of prizes, though the Viking in the longship carries a shield featuring the atomic structure of the element. The printmaking technique is a dry-point engraving on an acetate plate.

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